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ABSTRACT

This policy brief examines the graduation efficiency index (GEI), a measure developed by the University of Washington to enable the state to measure a student's or institution's efficiency in graduation. The study compares the GEI index with time-to-degree, the most widely used related measure, and finds that the latter does not measure student efficiency in degree pursuit regardless of enrolled time, nor does it reflect the current reality that only a minority (25 percent at Washington State University) of students graduate in four years. By contrast, the GEI which uses a formula that accounts for credits earned toward a degree compared to credits required for a particular degree, is a better measure of efficiency because it does not focus on elapsed or enrolled time but on actual credits earned. Limitations to the GEI are also noted, such as its retrospective character, its inability to consider effectiveness as well as efficiency, its vulnerability to manipulation, and its limitations when applied to transfer students' efficiency. The paper concludes that one cannot measure efficiency with a time-to-degree tool, or measure the value of extra credits earned with an efficiency index, and suggests that institutions use both measures to evaluate the institution's success in graduating students. (DB)

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COLLEGE OF EDUCATION
WASHINGTON STATE UNIVERSITY

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Introduction

Universities evaluate a wide variety of student data in the course of an academic year. One measure, the graduation rate, is reflective of a university's success as an institution. Universities want to know how many students of a particular cohort graduate in a particular time frame. Although graduation rates have remained surprisingly constant for the last ten years at most schools, concern about the graduation rate has increased. There are several reasons for the renewed interest in graduation rates. First, from a student's standpoint, a college degree is vital in today's competitive job market.

Second, all universities carry some responsibility to reduce the financial burden of a college education. There is little hope that financial support for universities or for students will increase from public or private sectors (Gillmore & Hoffman, 1997). Third, institutions are searching for ways to be more efficient at educating increasing numbers of undergraduate students as the population grows. Finally, and perhaps most important, graduation rates are a demonstrable success measure for institutions (Friedman, 1993). In the state of Washington they are used as an accountability measure by the Higher Education Coordinating Board.

The Board has recently adopted a new measure developed at the University of Washington, called the Graduation Efficiency Index (GEI). The index provides the state with a method of evaluating a student's or institution's efficiency in graduation. As such, it functions as one of the several state accountability indicators used by several baccalaureate institutions in Washington. The question, however, arises: is it a complete measure of graduation rates? This policy brief examines the GEI and its use as a graduation measurement tool.

Graduation Measurement

There are many factors that affect graduation rates and graduation efficiency: access to courses, availability of financial aid, student motivation, parental support, popularity of certain majors, complexity of requirements, age of students, and even the economic

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environment (Friedman, 1993). These factors are not overtly included in graduation rate measurement but do make a difference in the time spent earning a degree. How do institutions typically measure graduation rates? Until recently, two standard methods, time-to-degree and credit-to-degree, have been used exclusively. Time-to-degree reflects the time spent on degree completion from entry to graduation. Credit-to-degree refers to the number of credits students accumulate up to the point of graduation.

The differences in measurement of graduation rates using time-to-degree or credit-to-degree are considerable. While each method arrives at a number of students who complete baccalaureate degrees in a given time frame, factors such as full-time students who stop out for a period, students who reduce their credit load to part-time during their undergraduate years, majors that require more than the average number of credits, and students who accumulate more credits than necessary toward a degree, confound each method.

Time-to-Degree

The most well known and heretofore, most widely used measure, is time-to-degree. However, this method is based on a traditional time frame: students who begin at a baccalaureate institution (native students) finishing a bachelor's degree in four years and transfer students finishing in two years after transferring to a four-year institution (McKinney, Trimble, & Andrieu-Parker, 1996). Researchers suggest that the traditional time frame may be out of step with the times (Garcia, 1994).

In fact, Colorado State University (CSU) investigated graduation rates and found that a minority of native students actually finish in four years. To include a majority of students, the parameters of their study had to expand to include graduation rates at five and six years (CSU Office of Budgets and Institutional Analysis, 1997).

Of the Colorado State graduating class of 1992, only 26% graduated in the traditional four-year time frame--a record rate for CSU. When Colorado State compared its graduation rates to other institutions a similar pattern emerged. The majority of institutions graduated only 25-35% of their students in four years (CSU Office of Budgets and Institutional Analysis, 1997).

Washington State University (WSU) has a four-year graduation rate of 25% (WSU Office of Institutional Research personal communication, November 18, 1997). The low four-year graduation rate is seen as one major source of inefficiency in Washington state higher education institutions.

Time-to-degree gives a clear picture of the resources used by a student for the time they are enrolled at a university. It also helps administrators understand how students are progressing through their programs. Time-to-degree measurements can help assess an institution's success at graduating students based on a specific timeframe.

As an accountability measure, however, time-to-degree has come under scrutiny by legislatures. The underlying attitude is that the longer students take to complete a degree, the more resources are consumed and therefore the less resources available for other students seeking higher education (Gillmore & Hoffman, 1997).

The time-to-degree graduation rate measurement looks exclusively at elapsed and enrolled time for undergraduates. It does not measure student efficiency in degree pursuit, regardless of enrolled time. What, then, is efficiency in graduation and how is it measured?

Graduation Efficiency Index

As institutions anticipate increases in student enrollment in the state of Washington, there is greater concern about educating the masses efficiently (Gillmore & Hoffman, 1997). The Graduation Efficiency Index (GEI), is a way to look at graduation rates that is different from the time-to-degree measurement. This index has as its foundation the credit-to-degree method of measuring graduation rates.

The GEI is a formula that accounts for credits earned toward a degree compared to credits required for a particular degree. It is a measure of efficiency in graduation because it does not focus on elapsed or enrolled time but on actual credits earned toward a particular degree. If, for example, a student earns the same number of credits that the degree requires, he or she is 100% efficient in attaining a baccalaureate degree whether that student took 3 years or 30 years. Conversely, a student who finishes a baccalaureate degree in 4 years but earned 20 more credits than the requirement for a degree, is actually less efficient according to the GEI formula.

The GEI is not a measure of graduation rates. However, it impacts graduation rates because it is assumed that the more efficient a student is at completing credits toward a degree, the more likely he or she is to graduate in a timely fashion (Gillmore & Hoffman, 1997). That may not mean graduation in four years, but it certainly means graduation with as little wasted time and/or credits as possible. Efficiency in graduation, therefore, means that more students can be educated over time.

The formula for the Graduation Efficiency Index is specifically,

$$\frac{\text{Minimum Required Credits For Degree - Transfer Credits}}{\text{Sum of Enrollment Census Day Credits}} \times 100 = \text{GEI}$$

The Minimum Required Credits for Degree is a value that can be changed to reflect any program offered at an institution, from engineering to theater arts. Transfer Credits are those credits that students have completed at the transferring institution and are accepted at the receiving institution. Transfer credits are subtracted from the minimum credits required to reflect only the number of credits earned at the degree-granting institution. The Sum of Enrollment Census Day Credits is the cumulative sum of credits for which a student is

enrolled on the "census day" or (most often) the tenth day of each semester/quarter. This number and time frame helps account for credits dropped or added during the initial weeks of classes (Gillmore & Hoffman, 1996). The quotient is multiplied by 100 to achieve a percentage that is the "index" of efficiency. The higher the index, the greater the efficiency.

The Graduation Efficiency Index is simple, direct, and readily interpretable. It is equally applicable to full- and part-time students. It can be averaged for subsets of students (by degree type, department, transfer, or native) and can be easily tracked over time to assess effects of interventions and policy changes. However, there are also several limitations inherent to the GEI (Gillmore & Hoffman, 1997).

Limitations to the GEI

The Graduation Efficiency Index is not a perfect measurement tool, and as such, there are a number of caveats. First, student efficiency is always in retrospect. The GEI can only be applied to students who have completed a degree. Because the GEI equation is the total credits needed for a degree divided by the cumulative number of credits attempted, a student can only be pronounced efficient after he or she has attempted or earned those credits and graduated. Second, efficiency in the form of an index does not necessarily equal effectiveness. Credits for background, for enrichment, or for a skill that are earned by students, which do not apply to a degree, may nevertheless be as important as credits toward a degree. (Gillmore & Hoffman, 1996).

Third, the GEI is subject to manipulation. Credits required for a particular degree can be "padded" by departments. In other words, program credits are increased to account for student Full Time Equivalent (FTE) hours, thereby skewing the efficiency index.

Finally, transfer students' efficiency at the graduating institution cannot be accurately measured because the GEI cannot factor in the number of credits dropped, failed, or repeated from the transferring institution. The receiving institution can only count credits transferred, not credits attempted, thereby giving an index that will differ significantly between transfer students and native students. Efficiency, therefore, can only be estimated for transfer students. This problem of measuring the efficiency of transfer students compared to native students has created some controversy with the GEI formula (W. W. Washburn, personal communication, October 15, 1997) and may prompt a future variation of the formula that will enable institutions to appropriately compare transfer students' and native students' efficiency rates.

Although use of the GEI has been suggested as a way to view graduation efficiency, there are some who confuse the time-to-degree and the GEI methods and see the GEI as a replacement of time-to-degree. In fact, each measures a different part of the graduation rate.

Confusion about the GEI and time-to-degree often comes when administrators try to use a time-to-degree standard to measure efficiency in graduation rates. In fact, time-to-degree is

not a good measure of efficiency. Measuring only elapsed time of enrollment for students can skew results. Some students attend only part-time, drop out, stop out for a time, or take extra "enrichment" classes. Students change majors while enrolled and often lengthen their time-to-degree. Each of these scenarios, while important to time-to-degree information, does nothing to convey students' or institutions' efficiency in graduation.

Application of the GEI

The six public baccalaureate institutions are currently using the GEI in assessing graduation efficiency. All have computed GEIs for native students, transfer students, and departments. At Western Washington University, lower GEIs were found in science departments, and higher GEIs in social science departments. With this method it would seem to be possible to help improve departmental GEIs over time through intervention and program changes (McKinney, Trimble, Andrieu-Parker, 1996).

Conclusions

It is clear that one cannot measure efficiency with a time-to-degree tool, or measure the value of extra credits earned with an efficiency index. However, the question still remains whether the GEI is a better measure for undergraduate students at four-year institutions than time-to-degree indexes. Not necessarily. And therein lies the issue.

While the GEI is an effective measurement of efficiency (with some minor exceptions), it cannot replace time-to-degree measurements. It is important to remember that while efficiency in graduation is what most universities strive for, the value of a broad educational experience with extra classes may be equally important, but less efficient and less easily measured with an efficiency index.

The architects of the Graduation Efficiency Index have built a solid case for its use in measuring graduation efficiency. However, dual measurement systems using both the GEI and time-to-degree would give a more comprehensive picture of an institution's success in graduating students and provide valuable information not only to the Higher Education Coordinating Board in Washington but to students and their families.
Is the Graduation Efficiency Index a good measure of efficiency in graduation? Absolutely yes. Should it be used exclusively, or in place of other graduation rate measurements? Resoundingly no.

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